

Maximum Permissible Exposure Evaluation

FCC ID:2BD8W-I5

1. Client Information

Applicant	:	Shenzhen Fennessy Culture CO., Ltd.
Address	:	1505, East Block, Shengtang commercial building, Tairan 9 Road, Tian 'an, Shatoret, Futian District, Shenzhen City, China
Manufacturer	:	Dongguan Fennessy Culture CO.,LTD.
Address	:	No.75-1, Sanheng Road, Lianfeng, Dalingshan, Dalingshan Town, Dongguan City, Guangdong Province, China

2. General Description of EUT

EUT Name	:	Dnut i5	
Models No.	:	I5, I1, I2, I3, I4, I5Pro, I6, I7, I7S, I7Pro, I8, I9	
Model Different	:	All PCB boards and circuit diagrams are the same, the only difference is that colors.	
Product Description	:	Operation Frequency:	Bluetooth V5.0: 2402MHz~2480MHz
	:	Number of Channel:	79 channels
	:	Antenna Gain:	3dBi PIFA Antenna
Power Rating	:	Input: AC 120V/60Hz	
Software Version	:	beta19 P09 A1	
Hardware Version	:	I5V4.2	
Connecting I/O Port(S)	:	Please refer to the User's Manual	
Remark	:	the evaluation report used the EUT(202310-0120-1-2#).	

MPE Calculations for Bluetooth

1. EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

2. Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=(PG)/4\pi R^2$$

Where

S: power density

P: power input to the antenna

G: power gain of the antenna in the direction of interest relative to an isotropic radiator.

R: distance to the center of radiation of the antenna

3. Simultaneous transmission MPE Considerations

According to KDB447498: All transmitters and antennas in the host must be either evaluated for MPE compliance, by measurement or computational modeling, or qualify for the standalone MPE test exclusion in section 7.1. Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0 .

This means that:

$$\sum \text{ of MPE ratios } \leq 1.0$$

4. Test Result:

Bluetooth worst reported.

Mode	Frequen cy (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/cm ²) [S]	Limit of Power Density (mW/cm ²) (S)
GFSK	2402	2.14	2±1	3	3	20	0.0012	1
	2441	2.52	3±1	4	3	20	0.0016	1
	2480	2.302	2±1	3	3	20	0.0012	1
π /4-DQPSK	2402	2.197	2±1	3	3	20	0.0012	1
	2441	2.618	3±1	4	3	20	0.0016	1
	2480	2.312	2±1	3	3	20	0.0012	1
8-DPSK	2402	2.413	2±1	3	3	20	0.0012	1
	2441	2.829	3±1	4	3	20	0.0016	1
	2480	2.406	2±1	3	3	20	0.0012	1

5. Conclusion:

As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

Limits for General Population/ Uncontrolled Exposure

Frequency Range (MHz)	Power density (mW/ cm ²)
300-1,500	F/1500
1,500-100,000	1.0

For Bluetooth :2402~2480MHz

MPE limit S: 1mW/ cm²

The MPE is calculated as $0.0016\text{mW/cm}^2 < \text{limit } 1\text{mW/cm}^2$. So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR2.1091 (b).

The RF Exposure Information page from the manual is included here for reference.

Note

For a more detailed features description, please refer to the RF Test Report.

6. Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

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